

CLAIMS

What is claimed is:

1. A transducer assembly for a stringed musical instrument
5 having a legged bridge for supporting strings, comprising:
an enclosure having a cover and base, each having top
and bottom surfaces, the cover and base enclosing a volume
therebetween;
a top projection extending from the top surface of the
10 cover;
a bottom projection extending from the bottom surface
of the base; and
a transducer at least partially disposed within the
volume enclosed by the cover and base and adapted for
15 generating an electrical signal in response to forces
applied to the enclosure,
wherein the transducer assembly is configured to be
disposed between first and second portions of a first bridge
leg.
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2. The transducer assembly of claim 1, wherein the top
projection is configured to be disposed within a
corresponding bore in the first portion of the first bridge
leg.
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3. The transducer assembly of claim 2, wherein the top
projection and the corresponding bore in the first portion
of the bridge leg are dimensioned such that the first
portion of the first bridge leg is brought into contact with
30 the top surface of the cover when the top projection is

disposed within the corresponding bore in the first portion of the first bridge leg.

4. The transducer assembly of claim 1, wherein the bottom
5 projection is configured to be disposed within a corresponding bore in the second portion of the first bridge leg.

5. The transducer assembly of claim 4, wherein the bottom
10 projection is threaded and the bore in the second portion of the first bridge leg has a complimentary thread, whereby the bottom projection is selectively positionable within the corresponding bore in the second portion of the first bridge leg through rotation of the transducer assembly.

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6. The transducer assembly of claim 5, further comprising at least one electrical conductor in communication with and extending beyond the enclosure for selective engagement with external amplifying equipment.

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7. The transducer assembly of claim 6, further comprising a jack-plug pair for enabling selective engagement of the at least one electrical conductor with the external amplifying equipment.

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8. The transducer assembly of claim 1, wherein the transducer is in contact with the bottom surface of the cover and is adapted to convert a force applied by the cover to the transducer into the electrical signal.

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9. The transducer assembly of claim 8, further comprising plural transducers disposed with the enclosure.

10. The transducer assembly of claim 9, further comprising
5 a circuit board for supporting the transducers in contact with the bottom surface of the cover.

11. The transducer assembly of claim 10, further comprising a spacer disposed upon the circuit board for limiting the
10 forces applied by the cover to the transducers.

12. The transducer assembly of claim 10, further comprising a resilient support for enabling self-alignment of the transducers and circuit board with respect to the cover.

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13. The transducer assembly of claim 1, wherein the transducer comprises a fluid-tight volume enclosed by the cover and base for converting forces applied by the cover into corresponding pressure differentials within the volume.

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14. The transducer assembly of claim 13, further comprising a fluid-tight conduit, in communication with the volume enclosed by the cover and base, and an external transducer, in communication with the fluid-tight conduit, the external
25 transducer for converting pressure differentials in the volume to the electrical signal.

15. The transducer assembly of claim 1, further comprising a bridge height adjuster disposed within first and second
30 portions of a second bridge leg.

16. A multifunction transducer for a stringed musical instrument having a bridge, comprising:

a height adjuster disposed in conjunction with a leg of the bridge, and

5 a transducer assembly disposed within the height adjuster for reacting to forces transmitted through the bridge leg to the height adjuster by providing an electrical signal reflective of the forces.

10 17. The multifunction transducer of claim 16, wherein the transducer assembly comprises a substrate and at least one transducer disposed thereon, the transducer being in physical contact with a portion of the first height adjuster whereby forces transmitted to the height adjuster result in
15 force differentials at the surface of the transducer.

18. The multifunction transducer of claim 16, further comprising an electrically conductive cable in communication with the height adjuster and the transducer for conveying
20 signals reflective of the electrical response from the transducer to the forces applied by the height adjuster on the transducer.

19. A system for converting forces generated in a stringed
25 musical instrument having a bridge into electrical signals reflective of the forces, comprising:

a diaphragm in physical communication with at least a portion of the bridge;

a transducer assembly in physical communication with
30 the diaphragm; and

an enclosure for supporting the system in conjunction with the bridge.

20. The system of claim 19, wherein the enclosure comprises
5 top and bottom projections adapted for insertion into complimentary bores in the bridge, one of the projections being threaded along with the respective bore, thereby enabling the enclosure to function as a height adjuster.

10 21. The system of claim 19, wherein the diaphragm comprises a cover for the enclosure, the top projection extending from the diaphragm.

22. The system of claim 19, wherein the transducer assembly
15 comprises plural piezoelectric transducers.

23. The system of claim 19, wherein the transducer assembly comprises:
a fluid-tight chamber containing a fluid in communication
20 with the diaphragm;
a fluid-tight conduit in communication with the fluid-tight chamber; and
a transducer in communication with the fluid-tight conduit, wherein the transducer is adapted for converting a pressure
25 differential in the fluid within the fluid-tight chamber and conduit, resulting from deformation of the diaphragm due to forces generated within the musical instrument, to an electrical signal.

24. A method of installing a transducer assembly in a stringed musical instrument having a bridge with two legs, comprising:

removing the bridge from the stringed musical
5 instrument;

removing an intermediate leg section of each bridge leg to realize the bridge with two attached upper leg sections and a lower leg section associated with each upper leg section;

10 reinstalling the bridge on the stringed musical instrument with a height adjuster intermediate one lower leg section and the respective upper leg section and a combination height adjuster and transducer assembly intermediate the other lower leg section and the respective
15 upper leg section, the combination height adjuster and transducer assembly comprising at least one transducer; and electrically connecting the combination height adjuster and transducer assembly to an electrical signal amplifier,

whereby forces generated within the stringed musical
20 instrument are conveyed to the combination height adjuster and transducer assembly and are converted to electrical signals reflective thereof.

25. The method of claim 24, further comprising the step of
25 rotating the combination height adjuster and transducer assembly in order to alter the response of the transducer to the forces generated within the stringed musical instrument.

26. The method of claim 25, wherein rotating the
30 combination height adjuster and transducer results in the

adjustment of the height of the bridge with respect to the
stringed musical instrument.